Knowledge Management Initiatives

By

Dr. R Mishra

&

Ravi Arora

Tata Steel, Jamshedpur.

Abstract

Knowledge Management is the latest pursuit to seek competitive advantage in this global economy. However, it is difficult to institutionalise it in a large and complex organisation. This paper deals with the implementation process of Knowledge Management in our company. It highlights some of the important features like creation, capture, deployment and use of organisational knowledge. It also discusses its importance in providing glue across the smaller units (SBU) of the organisation.

Communities of practice as a latest addition in the area of Knowledge Management to help organisation solve the complex problems using tacit knowledge forms a part of this paper.

Text

INTRODUCTION

In a turbulent and discontinuous economy, knowledge is increasingly becoming the greatest assets of organizations. It is the source of innovation, growth and value. It is absolutely critical to building, preserving and leveraging institutional excellence.

The study of human knowledge is as old as human history itself. It has been a central subject matter of philosophy and epistemology since the Greek period. For centuries, individual and organization have passed their wisdom, knowledge and skills to succeeding generations.

Till recently traditional and formal ways of imparting knowledge continued to serve the needs of all sectors of society and industry. However, with the advent of the information / knowledge era and the rapidly changing and growing complexities, increasing need of innovation and renewals, traditional and formal methods are becoming woefully inadequate. As the basis of growth of modern society shifts from natural resources and physical assets to intellectual capital, organizations and their executives are grappling with several concerns relating to the management and institutionalizations of knowledge. The greater need is felt to have a structured and systematic approach to what is being properly known as Knowledge Management (KM). Knowledge has begun to gain a new wave of attention in recent years. Increasing number of scholars from various fields have begun to theorize management of knowledge (Nonaka et al). Significant advances have been made during the last decade and we can expect further changes in entirely new directions or as refinement of present methods.

ELEMENTS OF KNOWLEDGE MANAGEMENT

In essence, **Knowledge Management is a** *system for creating, capturing, organising,, disseminating and using knowledge in all of its forms within an organisation.*

From the above definition, we can divide the Knowledge Management process into 4 distinctive parts (fig. 2)

> **Create**
>> Knowledge is created in the organisation in one of the following ways
>> - **Dedicated Resources**: some of the organisation's resources are dedicated towards creation of knowledge. A good example can be R&D. If R&D people have close continuous interactions with the manufacturing and marketing and supported by an able culture, important and useful knowledge gets generated.
>> - **Investment**: Knowledge can be bought from the consultants or from the leading organisation. However, it entails investments and does not ensure the latest knowledge on the subject.
>> - **Cross functional teams**: When employees of cross-functional area meet and work on a problem they create knowledge. This method of creating knowledge has been extensively used in many organisations.
>> - **Networking of people**: Lot of knowledge gets generated when people of same area meet together and discuss on the subject.

Therefore to create knowledge by this method, the organisation need to ensure that people of common interest meet together and discuss the problems of the organisation.

Capture & Organise

" Knowledge deteriorates very fast. The time required for knowledge to reduce to half gets halved every time."
However this rate of erosion decreases with a corresponding increase in rate of usage (fig. 1).
If the knowledge is not used at the time of creation it will start eroding. Therefore when it will be required to use that knowledge it will not be fully available.
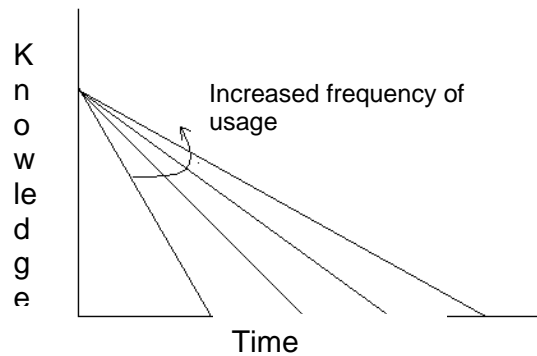

Fig. 1

Disseminate

After the knowledge is captured, it is important that knowledge is disseminated at the appropriate places and also used by the people. For doing this few IT tools may be used.

Use

Use is the ultimate goal of Knowledge Management. IT plays an important enabling role in disseminating knowledge but it is organisation culture and structure which plays the important role in motivating people to use knowledge. Organisational culture should support the reading, adapting and usage of the knowledge.

Effective Knowledge Management requires a combination of many organisational elements : Technology, Human resource practices, Organisational structures and culture – in order to ensure that the right knowledge is brought to bear at the right time. All these elements pose as a big roadblock to a successful Knowledge Management journey.

This paper attempts to describe the evolution of various facets of Knowledge Management in Tata Steel. An attempt has been made to discuss and find solutions to the problems mentioned above in introducing a Knowledge Management programme. The process of integrating the various divisions of the company with a common thread of Knowledge Management has also been discussed.

INITIAL KM SYSTEM

The Knowledge Management process started in our company with the revisit to our Vision Statement. After a long thought process and several revisions it was formulated. It reads as:

'Tata Steel enters the new Millennium with the confidence of a learning, knowledge based and a happy organisation.' ………………

To realize the vision, a need to have a formal Knowledge Management programme in our Company was felt. The responsibility of starting the process of building a Knowledge Management System was given to a small group. The immediate requirement of the group was the knowledge about 'how to start' Knowledge Management. To find an answer to this, a series of activities were undertaken. These include reading various books[1,2,3,4,5,6,7,8,9,10] and articles from leading international Journals and from Internet, attending a two-day programme by the local Management Institute and interactions with the leading consultants. All these helped the group to start with an initial action plan and draw a road map for the project.

The format

Since we wanted to follow the organised Knowledge Management process (Create, capture, Organise, disseminate and use) as mentioned before, the first task was to capture the abundant available knowledge in our company before emphasizing on the knowledge creation. Therefore journey to Knowledge Management began with designing a standard format for codification of knowledge. Dr. T Mukherjee, Vice President (Operations) made us understand at the very beginning that there is a need to design a standard format of about one page applicable to whole organisation, to capture the abundantly available knowledge and to store them in a central Computer for its productive use. This put us on the track of designing that one page format which should serve the objective. It was required that each knowledge submitted should be stored at a unique location for its fast and easy retrieval. Considering the size and gamut of work done in our company we chose two important dimensions to classify the knowledge pieces. These were:

1) Area
2) Domain

Area: Areas were derived by breaking our Key Business process. We identified seventeen areas to start with. (e.g. Mining, Steel Making, Finance etc.) The main focus at

the time of deciding the areas was Works division. At a later date we realized the need to add few more areas, which are being incorporated now.

Domain: The second dimension chosen for categorizing knowledge was 'Domain' of the knowledge. With a lot of brainstorming we could identify 17 Domains, which cut across all the areas. The Domains were identified from the deployment and retrieval point of view. For example, the 'lessons learnt' domain will be applicable in all the areas which we have identified above

The format (see appendix) had the following field also, which was selected after long deliberations.

Reference & Cross reference: The reference was given to indicate the back-up references of our company only. Documents generated inside our company can be put under 'reference'. All the back-up papers, reports, journals, articles etc. generated outside our company can be indicated by putting them under 'Cross reference'. The idea was that if anyone is interested in knowing the details of the knowledge, he/she may refer the reference material.

The System

After designing the format, it was required that every employee should contribute by filling up the format and hence help in developing a knowledge base. To propagate Knowledge Management (KM) & create awareness amongst the employees it was necessary to organise training programmes continuously. It was also required to evangelise the idea of KM to top executives. A brainstorming session was organised where all the top executives were invited. Meanwhile, a prototype system, which we had conceived, designed and developed in MS-Access, was also presented to them. We demonstrated as to how knowledge can be entered & how easily it can be retrieved when required. The concept of full text search was well appreciated. The prototype was approved and it was decided that ITS will help in launching the system on intranet using Lotus Notes. Based on the prototype, ITS developed the system in two months. The system that was first launched in our Intranet had the following features

- Anyone could add Knowledge from anywhere after connecting to our Intranet. This knowledge used to be available instantly for general viewing.

- Person submitting the knowledge used to get acknowledgement.

- Anyone could search (Full text) or browse knowledge through our Intranet.

- After reading the knowledge, feedback on the knowledge could be given.

To tap the available abundant knowledge, an initial target of codifying 4 knowledge pieces per officer per month was fixed.

We started organising awareness programmes in batches. To make the things faster we started visiting departments and used to cover almost all the officers. Duration of training used to be of about 2 hours, which included understanding of the codification format for entering knowledge. It is normally a big barrier to do new thing for the first time. When it

comes to writing, barring few, most of us are not comfortable. Therefore, to break this barrier and to help them, we used to get one knowledge format filled up at the end of every programme. This helped us in

- Making the form to be understood properly to all.
- Breaking the initial inertia.
- Motivate people by having their name put in Intranet against their knowledge.

Results

The result of this was very encouraging and visible. Knowledge pieces started coming from various department. Since the training program was being conducted in parallel, the knowledge flow kept on increasing. People were very enthusiastic about the whole thing. We used to concentrate on explicit knowledge in our training and therefore lot of explicit knowledge started coming. All the Bench Marking, QIP, VE projects were summarised and put into intranet. We used to encourage people to share some of their experiences as well. Some of failure experiences also got shared.

We did not remove/filter any knowledge, which was submitted because we wanted knowledge sharing culture to build in. Very soon people started reading good articles on the relevant subjects and started codifying them into the format. This was another positive outcome we observed out of the Knowledge Management exercise. Reading habit was being developed and also chances of good articles being read by relevant people also increased. Screening of knowledge was planned to begin at a later date when most of the people had inculcated the habit of sharing and writing.

After the good showing in the initial, the knowledge flow decreased as compared to the earlier months. To give a fillip to it, we started announcing names of top 5 individuals and top 5 departments who contributed maximum knowledge. The results were encouraging and we continued this for 2 months. After 2 months, we stopped announcing top 5 individuals, but continued with top 5 departments.

EXTENSION OF THE KM SYSTEM

Spreading of the wings

Since intranet was not available everywhere we used to receive lot of hard copies to put them all into intranet. We partly outsourced data entry, but it was beginning of other problems, since all the knowledge were not legible. We could not understand some of the technical terms also. To cope up with these problems, we extended the Knowledge Management system to IBM terminals that have a wider coverage in our organisation. This made the knowledge entry and browsing possible from IBM / MIMS terminals as well.

Integration with other system

Lot of knowledge is being captured in our organisation in small isolated pockets. Some of the departments have designed and developed databases to suit their requirement of logging locally generated knowledge. A sample survey revealed that these databases were being used only to some extent. We decided to integrate these databases into Knowledge

Management system to give wider coverage to them and also to have a single window for all the knowledge. One such case was knowledge generated in MIMS system. To start with, we picked up failure analysis module of MIMS. It is being integrated to the Knowledge Management system in such a way that any failure analysis done in MIMS system will be transferred automatically to Knowledge Management System (KMS) if the problem was generic and critical in nature. In other cases it will be left to user to decide if he/she would like to transfer it to KMS or not.

Knowledge repositories available at TOP, E&A & MED etc. are also being planned to be interconnected so that the relevant knowledge on these systems is available from a single window.

Efforts were made to install a foolproof system of codifying the knowledge generated from other sources like foreign reports, QIP, VE etc. It was made mandatory that for an improvement project to qualify, knowledge should be submitted and codified into the system in the standard format.

The knowledge codification format with some minor changes was sent to Foreign Travel section. It was mandatory for all employees to submit the knowledge on the Foreign Visit in the prescribed format.

The security system

Since the knowledge repository was available on Intranet there was no security built into it. By this time, we had captured many important knowledge. Some of the knowledge pieces were classified, which were not meant for general employees. At this time it was thought to build some security into the system. As a result a security system was conceived, designed & developed & thereafter launched. All the knowledge now are divided into two categories

- General
- Classified

The system has been made such that

- No knowledge is accessible to non-employees.
- A few classified knowledge can be viewed by a few identified people.

Communities Of Practice

People as an individual or in a group, who carry out their routine job and meet informally or formally, create lots of knowledge on a regular basis. This knowledge is mostly to increase the productivity and gives the organisation incremental improvements. The people who are dedicated for knowledge creation create another type of knowledge, which is very rich. The company puts its conscious efforts to promote both these type of people to create knowledge To have Sustained Competitive advantage (SCA) by continuously creating knowledge, organisation need to nurture people in forms of groups or individuals. The challenging job for the organisation is to identify these individuals with high potential, form a cohesive group, and provide learning culture, infrastructure and

appropriate incentives to successfully carry out the job of generating and disseminating knowledge.

This has been practiced by many companies in the form of 'Communities of practice' (COP). These Communities of practice are agglomeration of people who come together to share their experiences and knowledge in free flowing way and foster new approaches to problem solving. Members of the community are informally bound together by shared expertise and passion for joint enterprise. These Communities can have members from the same functions or they can be cross functional. However, knowledge generation through communities works best when there is some complexity and conflict within the members to create new synergy. COP should bring together people with different perspectives to work on a problem or a project, forcing them to come up with joint answer. As per Dorothy Leonard Barton[10] "Innovation occurs at the boundaries between mindsets, not within the provincial territory of one knowledge and skill base." COP can create, capture, use and disseminate the knowledge and best practices. As per Etenne C. Wenger and William M. Snyder[1] Communities of Practice can

- Drive Strategy
- Start new lines of business
- Solve problems quickly
- Transfer best practices
- Develop professional skills
- Help in recruiting and retaining talents.

Communities may be of any size ranging from 10 to 100s. Most important factor in determining the size of a community is that it should have all the members who are the core participants and have some stake or passion for the topic of the community. They should be able to provide intellectual leadership to the community.

The strength of the communities comes from within. The success of the community depends a lot on its initial functioning. If the leader chosen by the members can steer them to initial success of creating knowledge the rest comes from within itself. They become self-perpetuating and reinforce themselves whenever they generate new knowledge.

Communities of practice have been formed in Tata Steel as well with a view to focus on knowledge generation, dissemination and use. 21 communities have formed, aligned with our strategic goals. These have been formed such that a wide variety of people can join them. The idea is to start with few communities, nurture them and make them successful. Out of these 21 communities, 12 are technical and 9 are managerial. Formation of sub-communities within a community is being encouraged. Once the concept of communities is percolated , proved and established more number of communities may be formed to cover all the functions and people of the organisation.

To ensure that the communities formed grow continuously and do not die down,

The communities should be formed in line with company's strategies: The task is to identify people with the ability and passion to further develop organization's core competencies and help them come together. It might so happen that the interest of the members of the community and the domain of the community are not aligned. It is in

the interest of the company to redefine its community domain and adopt a methodology to select members accordingly.

Provide all infrastructure help that will help them grow.: This will include

a) **IT facilities**
   1. Virtual meetings on PCs and generation of Auto-Minutes: This may begin at a later date (say 1 year), when the members of the communities become familiar with the functioning of communities.
   2. Chats on a topic at a pre-fixed time and its recording
   3. Text Mining to extract knowledge out of the above recordings
   4. Broadcasting of the presentations on the PC.
   5. Training programme (Virtual classes) on PCs.

b) **Budgets:** Providing sufficient budgets to carry out their meetings, conduct experimentation, visiting other companies to learn, browsing Internet etc.

c) **Incentives**: Linkage to KRA and reward structure: Some of the major companies have linked the performance of the community members in community activities to rewards and recognition. The reward system of the organisation should support collaboration.

d) **Provide sponsors**: They help to provide resources and coordination.

Assess the value of community: The value created by any Knowledge Management exercise has always been a Conundrum. The answer may lie in :

- By reviewing the activities of the community
- The participation level
- The regularity of meetings of the community.
- Anecdotal evidences obtained thru interview of the members.
- Achievement of the business objectives.

It should be understood that it is very difficult to value the community functioning. If the members are meeting regularly, have a fixed target / goal and is lead by a member who has maximum stake, the results are bound to come. The very idea of the community is to get the variety of people come together to think together.

CHALLENGES AHEAD

USAGE OF THE KNOWLEDGE REPOSITORY

In the phase I of Knowledge Management, our concentration was mainly on knowledge capturing and we were quite successful in this endeavour. But

capturing knowledge is only a part of Knowledge Management. Its ultimate goal is to ensure the usage of knowledge. Therefore, to enhance the usage of knowledge, we plan to take the following actions.

Pull Strategies

Control on the Quality of the knowledge: The quantity of knowledge flow / sharing is maximum when there is minimum check or scrutiny applied to the knowledge being shared. However, without any check, there are chances of some irrelevant knowledge creeping in. Further, if the organisation applies PUSH Strategy to accumulate knowledge the deterioration in quality of knowledge takes place. Therefore we can see that there is a trade-off between the Quantity of the knowledge being shared and the quality of knowledge. To achieve the maximum of both, Quality and Quantity, we can do some scrutiny / screening of knowledge by experts with a little time lag. This job will involve a lot of efforts from the experts.. To come out of this situation we can have a 2-tier system. Every knowledge submitted would be routed first through a content manager (part of the Knowledge Management group or member of every community) who will

- Ensure that the language is correct and understandable.
- Remove the redundant knowledge and the information.
- Decide the importance of knowledge from the security point of view.

After screening from the Content is complete, the knowledge can be sent to experts to do the following activities:

- Adding value to the knowledge with the help of already existing knowledge on same / similar subject and / or providing link (hyper) to them
- Adding tacit knowledge.
- Selecting the knowledge, which can be widely used in the organisation.
- Suggesting the places and the people who can make max use of the knowledge.

This job requires time and effort and can be done by a panel of experts or individual experts. If a panel of experts does it, it will give better value addition but will take longer time. If the individuals do it, it will be fast but there are chances of missing few points.

Whatever option and tier is chosen, the next question is how to send the knowledge and route them to various people. This can be done by sending hard copies or by electronic media. Lotus Notes Work flow system offers a very good solution in this regard. But then, we need to have Lotus Notes Clients installed with all the experts in LAN.   This requires improvement in the infrastructure and training to officers in handling this system.

Periodic publication on KM: To highlight and thus encourage the good quality of knowledge contribution and usage it has been thought that the few good knowledge pieces during a period will be printed & circulated. Similarly, the knowledge pieces that have been used productively will be highlighted separately along with the name of the user and the author. This will enhance the quality of knowledge & quality of usage. In addition it will also increase the awareness of the existence of better quality knowledge and will also motivate

Knowledge from Internet: Some of the latest knowledge on the key processes of our company are available on Internet. To enrich the knowledge management database with the knowledge / information available on internet, our search engine may not only locate knowledge pieces in our KMS but also Internet. The search result of Internet, obtained through this software normally gives only the titles. To get the details of knowledge,

- User will have to connect to internet for which every department should have internet access OR
- KM group / R&D / Technology group should have a dedicated group of 2-3 officers who will search Internet for knowledge on different topics. As and when the relevant knowledge is available it will be sent to relevant people for action

Highlighting the used knowledge: The knowledge pieces that have been used by someone may be highlighted in following ways:

- Organising a seminar for Knowledge Management and invite users to present successful case studies on the usage of knowledge.
- Creating a separate space in the Knowledge Management site on intranet to display knowledge that have been used by someone. The name of user and author along with savings will also be displayed.

Delivering the sought after knowledge:- We may send those knowledge pieces to line managers, which are related to their business objectives and may help them in problem solving.

Push Strategies

Automatic knowledge transfer: In the present system, it is required that the users search for the relevant knowledge in KMS, whenever required. They are not aware of the latest additions in the knowledge bank. According to one survey, which we did, most of the people think that very few knowledge are useful and therefore are difficult to locate. All this can be overcome by ensuring that the right knowledge is delivered to the right person at the fastest speed. We are planning to take area of interest from all users (all employees of the company), which preferably should be related to his area of work, and deliver them the knowledge on the same. This will ensure that all the latest additions in knowledge bank are sent to the relevant people by e-mail at the fastest speed. This will increase the probability of usage of knowledge. The above will also help in controlling the quality of knowledge since the people will be more conscious about the quality because the knowledge pieces will be directed to many executives.

Access to out locations: KM cannot work efficiently in a isolation. The whole organisation needs to be connected & collaborated. Server will be provided in all the out-locations & will be connected to the central server at Jamshedpur.

Replication of knowledge will be done regularly through Tata Net. There are 2 methodologies that can be adopted here.

- **Cloning of the Servers:** In this system all the servers will have identical database. All the knowledge pieces generated in a server during the day will be transferred to all other servers. This will ensure fast retrieval of knowledge from the local server but with lots of traffic between the servers and cost.
- **Transfer of relevant knowledge:** In this system only those knowledge that are relevant to the particular out-location will be transferred to the server of that out-locations. The advantage of this system is that the traffic on the server network will be low and the out-locations can be managed with low capacity of server. But the problem will arise when some user will try to retrieve the knowledge, which is not available on the local server. In that case the knowledge will be fetched from the central server (Jamshedpur), which will take longer time.

CREATING AND CAPTURING TACIT KNOWLEDGE

In our first year of launch of Knowledge Management we had given the thrust to capture abundantly available explicit knowledge and also to some extent the Tacit Knowledge. The idea was to avoid re-inventing the wheel at the very first place. Capturing of the tacit knowledge is very much desirable but most challenging part of Knowledge management.

An organisation can adopt any of the following four methodologies to capture the tacit Knowledge.

Personalisation strategy

This method is used by some of the consulting companies. In this, the transfer is slow but complete. There are no distortions in the knowledge transfer. Experts are identified in different areas and 2-3 people are attached to every expert. Some important projects may be given to the expert, which may involve most of his skills. In the process the people attached learn a lot gradually. There are some risks attached to this strategy. The people chosen for association with the experts may leave the organisation after learning. Also, if knowledge is confined to 2-3 people, the entire organisation will not reap the benefits of the expert's knowledge. Therefore it is imperative to have proper HR policies to address this issue.

Motivating experts to convert tacit knowledge to Explicit Knowledge

A lot of tacit knowledge of experts can be captured if we attach incentives to it. The experts can convert their tacit knowledge into Checklists, Heuristics, Thumb rules, Decision rules and guidelines. While installing a system of incentives for sharing knowledge we can have a simultaneous incentive system for usage of these knowledge.

These incentives have been employed in several successful companies in different ways. Some companies share part of the financial gains achieved by the knowledge usage and creation to the employees who have generated and used the knowledge.

Communities of Practice

Communities of practice discussed above are another organisational form, which helps in creating knowledge and also in capturing tacit knowledge of experts.

Directory of experts and problem discussion with them

Any employee should be able to approach to an expert to discuss his / her problem on the related subject. The list of experts will be readily available in the Intranet for the benefit of all the employees. This list is being prepared with the help of HR database and also in consultation with the Divisional heads. An intelligent system is also being designed that will report the probable experts in various areas depending upon the type and quality of knowledge shared. Employees will be able to log on the problem into the system and the response from the experts will be made available to the person concerned as well as to the knowledge repository.

Linking knowledge sharing to performance evaluation

Knowledge sharing has been made as one of the key parameters in the performance evaluation system of many good multinational companies. This helps in capturing the rich tacit knowledge of all individuals, especially the experts.

MEASURE OF BENEFITS

Typically a knowledge initiative is an infrastructure project where the cost is visible, but the benefits are diffused throughout the organisation. The task of measuring the benefits from the Knowledge Management exercise does not have a ready solution. Knowledge Management enhances and compliments other organisational initiatives such as TQM, Benchmarking, BPR, and other improvement projects. There can be several measures of finding the benefits of Knowledge Management, which are debatable. Some of the suggested measures are:

1. Pre-launch audit and Post-launch audit of few selected parameters.
2. Increase in the number of innovations / new products
3. Up gradation of the process / products
4. Reduction in the number of wrong decisions.
5. Reduction in re-invention of the wheel.
6. Reduction in customer complaints.

Conclusion:

Knowledge Management caters to the critical issues of organisational adaption, survival and excellence in the face of increasingly discontinuous environmental change. Issues, such as tacit knowledge sharing and usage of knowledge represent fundamental challenges but one with great rewards. The application of HR initiatives and IT to these issues within the organisation has the potential for dramatically improving the business value chain. The journey to Knowledge Management has just begun!

References:

1. Etienne C. Wenger and William M. Snyder, Communities of Practice: The organisational Frontier, Harvard Business Review, Jan-Feb 2000, p 139-145.
2. Morten T Hansen, Nitin Nohria & Thomas Tierney, What's your strategy for managing knowledge? Harvard Business review, March-April 1999, p 106 – 116
3. Leigh P Donoghue, Jeanne G. Harris & Bruce A. Wietzman, Knowledge management strategies that create value, Outlook 1999, Number 1
4. Thomas H Davenport, David W. De Long & Michael C Beers, Successful Knowledge Management Projects, Sloan Management Review, Winter 1998
5. Liam Fahey & Laurence Prusak, The eleven deadliest sins of Knowledge Management, California Management Review, Vol 40 No. 3 Spring 1998
6. Michael H Zack, Developing a knowledge Strategy, California management review, Vol 41 No. 3, Spring 1999
7. Jay Liebowitz, Tom Beckman, Knowledge Organisations, St. Lucie Press
8. Harvard Business Review on Knowledge Management, A Harvard Business Review paperback
9. Ikujiro Nonaka & Hirotaka Takeuchi, The knowledge creating Company, Oxford University Press, 1995
10. Thomas Davenport & Laurence Prusak, Working Knowledge, Harvard Business School Press,1998